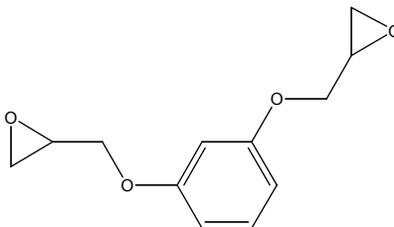


DIGLYCIDYL RESORCINOL ETHER

CAS No. 101-90-6

First Listed in the *Fifth Annual Report on Carcinogens*



CARCINOGENICITY

Diglycidyl resorcinol ether is *reasonably anticipated to be a human carcinogen* based on sufficient evidence of carcinogenicity in experimental animals (IARC 1985, 1999, NTP 1986). When administered by gavage, the chemical induced squamous cell carcinomas and papillomas of the forestomach in rats and mice of both sexes.

No adequate data were available to evaluate the carcinogenicity of diglycidyl resorcinol ether in humans (IARC 1985, 1999).

PROPERTIES

Diglycidyl resorcinol ether is a combustible, straw-yellow liquid with a slight phenolic odor. It is miscible with acetone, chloroform, methanol, benzene, and most organic solvents. When heated or exposed to flame, diglycidyl resorcinol ether vapors can explode (IARC 1976, 1985, 1999, HSDB 2000).

USE

Diglycidyl resorcinol ether is used as a liquid spray epoxy resin and as a reactive diluent in the production of other epoxy resins used in electrical, tooling, adhesive, and laminating applications (IARC 1976). It is also used as a curing agent in the production of polysulfide rubber and as a coating for metal and certain pavements to increase tensile strength (IARC 1985, HSDB 2000).

PRODUCTION

Diglycidyl resorcinol ether is not currently produced commercially in the United States (HSDB 2000); it had previously been produced domestically in commercial quantities by only one company, and while production volumes are considered to be proprietary information, the 1977 production was estimated to be between 10,000 and 100,000 lb annually by this single manufacturer (TSCA 1979, IARC 1985). Before 1977, diglycidyl resorcinol ether was produced by two U.S. firms. It has been produced since at least 1974 (IARC 1985, 1999). Chem Sources (2001) identified one U.S. supplier of the chemical. Data on imports and exports were not available.

EXPOSURE

The primary routes of potential human exposure to diglycidyl resorcinol ether are inhalation and dermal contact mainly during its production. Consumer exposure may occur through the use of epoxy resin products. The National Occupational Hazard Survey, conducted by NIOSH from 1972 to 1974, estimated that 3,106 workers were potentially exposed to diglycidyl resorcinol ether in the workplace (NIOSH 1976). This estimate was derived from observations of the actual use of the compound (44% of total observations), the use of trade name products known to contain the compound (55%), and the use of generic products suspected of containing the compound (1%). The National Occupational Exposure Survey (1981-1983) indicated that 740 workers were potentially exposed to diglycidyl resorcinol ether (NIOSH 1984). This estimate was based only on observations of the actual use of the compound.

Total environmental releases from the two facilities reporting diglycidyl resorcinol ether emissions to the EPA for the year 1996 were 510 lb, given as absolute air release. Total air emissions of 500 lb were given by a facility located in Maple Shade, New Jersey, reporting under Standard Industrial Classification (SIC) Code 2851, paints and allied products (TRI96 1998). Total air emissions in 1999 for the same reporting facilities decreased to 20 lb (TRI99 2001).

REGULATIONS

EPA regulates diglycidyl resorcinol ether under the Toxic Substances Control Act (TSCA). The Interagency Testing Committee (ITC) of TSCA has recommended this compound for priority testing. In addition, EPA requires manufacturers and processors to report production, use, exposure, and health and safety data concerning diglycidyl resorcinol ether.

OSHA regulates diglycidyl resorcinol ether under the Hazard Communication Standard and as a chemical hazard in laboratories. Regulations are summarized in Volume II, Table 72.

REFERENCES

Chem Sources. Chemical Sources International, Inc. <http://www.chemsources.com>, 2001.

HSDB. Hazardous Substances Data Bank. Online database produced by the National Library of Medicine. Diglycidyl Resorcinol Ether. Profile last updated February 11, 2000. Last review date, August 7, 1991.

IARC. International Agency for Research on Cancer. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Cadmium, Nickel, Some Epoxides, Miscellaneous Industrial Chemicals and General Considerations on Volatile Anaesthetics. Vol. 11. 306 pp. Lyon, France: IARC, 1976.

IARC. International Agency for Research on Cancer. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Allyl Compounds, Aldehydes, Epoxides, and Peroxides. Vol. 36. 369 pp. Lyon, France: IARC, 1985.

IARC. International Agency for Research on Cancer. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. Re-evaluation of Some Organic Chemicals, Hydrazine, and Hydrogen Peroxide. Vol. 71. 1589 pp. Lyon, France: IARC, 1999.

Diglycidyl Resorcinol Ether (Continued)

NIOSH. National Institute for Occupational Safety and Health. National Occupational Hazard Survey (1972-74). Cincinnati, OH: Department of Health, Education, and Welfare, 1976.

NIOSH. National Institute for Occupational Safety and Health. National Occupational Exposure Survey (1980-83). Cincinnati, OH: Department of Health and Human Services, 1984.

NTP. National Toxicology Program. Technical Report Series No. 257. Toxicology and Carcinogenesis Studies of Diglycidyl Resorcinol Ether (Technical Grade) (CAS No. 101-90-6) in F344/N Rats and B6C3F₁ Mice (Gavage Study). NIH Publication No. 87-2513. 222 pp. National Toxicology Program, Research Triangle Park, NC, and Bethesda, MD, 1986.

TRI96. Toxic Chemicals Release Inventory 1996. Data contained in the Toxic Chemical Release Inventory (TRI). Available from National Library of Medicine's TOXNET system, 1998.

TRI99. Toxic Chemicals Release Inventory 1999. Data contained in the Toxic Chemical Release Inventory (TRI). Available from National Library of Medicine's TOXNET system, 2001.

TSCA. Toxic Substances Control Act, Chemical Substance Inventory, 1979: public record.